

660020-22061260

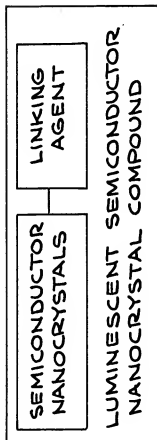


FIG. 1

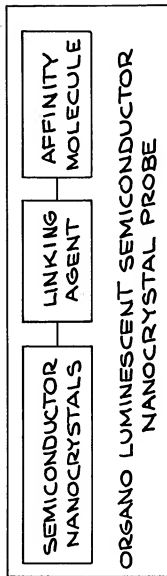


FIG. 2

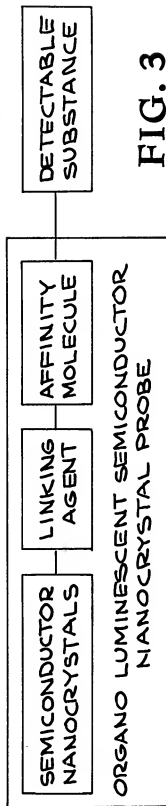


FIG. 3

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LINKING TOGETHER A SEMICONDUCTOR  
NANOCRYSTAL CAPABLE OF EMITTING  
RADIATION IN A NARROW WAVELENGTH BAND  
AND  
ONE OR MORE LINKING AGENTS CAPABLE OF  
ALSO LINKING TO AN ORGANIC AFFINITY  
MOLECULE;

AND  
LINKING TOGETHER AN ORGANIC AFFINITY  
MOLECULE CAPABLE OF SELECTIVELY  
BONDING WITH A DETECTABLE SUBSTANCE  
AND  
THE ONE OR MORE LINKING AGENTS CAPABLE  
OF ALSO LINKING TO A SEMICONDUCTOR  
NANOCRYSTAL;

TO THEREBY FORM AN ORGANO LUMINESCENT  
SEMICONDUCTOR NANOCRYSTAL PROBE  
CAPABLE OF BONDING TO A DETECTABLE  
SUBSTANCE IN A MATERIAL AND, FOR  
EXAMPLE, TO EMIT RADIATION OF A NARROW  
WAVELENGTH BAND WHEN EXPOSED TO  
EXCITATION ENERGY TO INDICATE THE  
PRESENCE OF THE DETECTABLE SUBSTANCE

FIG. 4

DETERMINING THE PRESENCE OF A DETECTABLE SUBSTANCE IN A BIOLOGICAL MATERIAL BY CONTACTING THE BIOLOGICAL MATERIAL WITH AN ORGANO LUMINESCENT SEMICONDUCTOR NANOCRYSTAL PROBE COMPRISING :

1. A SEMICONDUCTOR NANOCRYSTAL CAPABLE OF EMITTING, ABSORBING, SCATTERING, OR DIFFRACTING ENERGY IN A NARROW FREQUENCY BAND WHEN EXCITED;
2. AN AFFINITY MOLECULE CAPABLE OF BONDING TO THE DETECTABLE SUBSTANCE; AND
3. ONE OR MORE LINKING AGENTS CAPABLE OF LINKING TO BOTH THE SEMICONDUCTOR NANOCRYSTAL AND THE AFFINITY MOLECULE

REMOVING FROM THE BIOLOGICAL MATERIAL PORTIONS OF THE ORGANO LUMINESCENT SEMICONDUCTOR NANOCRYSTAL PROBE NOT BONDED TO THE DETECTABLE SUBSTANCE

EXPOSING THE BIOLOGICAL MATERIAL TO ENERGY CAPABLE OF EXCITING THE SEMICONDUCTOR NANOCRYSTAL IN ANY ORGANO-LUMINESCENT DETECTION COMPOUND PRESENT IN THE BIOLOGICAL MATERIAL TO EMIT, ABSORB, SCATTER OR DIFFRACT ENERGY

DETECTING ANY ENERGY EMITTED AND /OR ANY ABSORBED, AND/OR SCATTERED OR DIFFRACTED BY THE SEMICONDUCTOR NANOCRYSTAL INDICATING THE PRESENCE IN THE BIOLOGICAL MATERIAL OF ANY DETECTABLE SUBSTANCE BONDED TO THE ORGANO-LUMINESCENT DETECTION COMPOUND

FIG.5